In the Claims

1. (Previously Presented) A cardiac rhythm management system, comprising:

at least one electrode;

a signal sensing circuit coupled to the electrode to sense a cardiac signal, the cardiac signal having signal complexes;

a controller coupled to the sensing circuit, wherein the controller receives the sensed cardiac signal, and wherein the controller includes:

memory configured to store signal complexes and to store sets of predetermined templates, the predetermined templates including sets of template zones; and

an analyzing module configured to:

compute curvatures at sample points on the sensed cardiac signal,

extract features from the computed curvatures, and

classify the signal complexes by comparing the extracted features to the template zones of the predetermined templates.

2. (Original) The system of claim 1, wherein the template zones include a center amplitude, a time width and an amplitude width.

3. (Original) The system of claim 2, wherein the template zones include different centers and widths for different types of cardiac signals.

4. (Original) The system of claim 3, wherein the controller further includes a scoring module, wherein the scoring module assigns a score to an extracted feature based on how well the feature matches a set of template zones.

5. (Original) The system of claim 4, wherein the template zones are modified over time to improve matching with the extracted features.

6. (Previously Presented) The system of claim 1, wherein the analyzing module is configured to assign an unknown classification to a signal complex when the extracted features fail to match the sets of templates.

7. (Previously Presented) A method comprising:

sensing a voltage versus time cardiac signal using an implantable medical device;

converting the voltage versus time cardiac signal into a time versus time signal;

computing curvature at sample points on the time versus time signal;

extracting features from the computed curvature;

comparing the extracted features with a set of predetermined templates; and

classifying the cardiac signal based on an outcome of the comparison.

8. (Previously Presented) The method of claim 7, wherein extracting features from the computed curvatures includes separating a set of features associated with a first cardiac signal complex upon detecting a subsequent second cardiac signal complex.

9. (Previously Presented) The method of claim 8, wherein separating the set of features includes identifying a fiducial feature from the set of separated features based on comparing the time when the first signal complex occurs with the time when the separated set of features associated with the first signal complex occurs.

10. (Previously Presented) The method of claim 7, wherein comparing the extracted features with a set of predetermined templates includes comparing the extracted features

with a set of predetermined time versus time templates.

11. (Previously Presented) A cardiac rhythm management system, comprising:

at least one electrode;

a signal sensing circuit coupled to the electrode to sense a cardiac signal, the cardiac signal having signal complexes;

a controller coupled to the sensing circuit, wherein the controller receives the sensed cardiac signal, and wherein the controller includes:

memory configured to store at least a first signal complex; and

an analyzing module configured to:

compute curvatures at sample points of the sensed cardiac signal,

continuously process the sensed cardiac signal to produce an absolute value of the first derivative of the sensed cardiac signal, and

compare the absolute value of the first derivative to a predetermined decaying threshold value to detect a second subsequent signal complex.

12. (Previously Presented) The system of claim 11, wherein the analyzing module separates a set of features associated with the first signal complex upon detecting the second signal complex.

13. (Currently Amended) The system of claim 11, wherein the second signal complex is detected ~~when the~~ when the absolute value of the first derivative of the cardiac signal exceeds the predetermined decaying threshold value.

14. (Previously Presented) The system of claim 12, wherein the analyzer module is configured to identify a fiducial feature from the set of separated features associated with the first signal complex.

15. (Previously Presented) The system of claim 14, wherein the fiducial feature is identified based on comparing a time when the first signal complex occurs with the time when the separated features occur.

16. (Previously Presented) The system of claim 12, wherein the memory stores the features associated with the first signal complex, and the stored features are replaced with features of the second signal complex when the second signal complex is detected.

17. (Previously Presented) A method comprising:

sensing a cardiac signal using an implantable medical device;

computing curvature at sample points on the sensed cardiac signal;

computing average curvature between two adjacent sample points by computing an integral of the curvature between the two adjacent sample points;

extracting features from the computed curvatures;

comparing the extracted features with a set of predetermined templates; and

classifying the sensed cardiac signal based on an outcome of the comparison.

18. (Previously Presented) The method of claim 17, wherein computing the curvature at sample points on the sensed cardiac signal includes computing a curvature versus time curve, and wherein computing an integral of the curvature includes finding the area under a curvature versus time curve.

19. (Original) The method of claim 18, wherein extracting features from the computed curvatures includes defining the features by a value of the area under the curvature versus time curve.

20. (Original) The method of claim 19, wherein extracting features from the computed curvatures includes comparing the value of the area for the features to an area threshold value and eliminating features with area values less than the threshold area value.